

## Tempered Pragmatism

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# TEMPERED PRAGMATISM\*

Ian Rumfitt

Forthcoming in Cheryl Misak and Huw Price, eds., *Pragmatism in the Long Twentieth Century: Proceedings of the 2014 Dawes Hicks Symposium* (London: British Academy, 2016)

**Abstract** This paper assesses the prospects of a pragmatist theory of content. I begin by criticising the theory presented in D.H. Mellor's essay 'Successful Semantics'. I then identify problems and lacunae in the pragmatist theory of meaning sketched in Chapter 13 of Dummett's *The Logical Basis of Metaphysics*. The prospects are brighter, I contend, for a *tempered* pragmatism, in which the theory of content is permitted to draw upon irreducible notions of truth and falsity. I sketch the shape of such a theory and illustrate the role of its pragmatist elements by showing how they point towards a promising account of the truth conditions of indicative conditionals. A feature of the account is that it validates Modus Ponens whilst invalidating Modus Tollens.

**Keywords** Pragmatism, truth, content of a statement, indicative conditionals, F.P. Ramsey, Michael Dummett, D.H. Mellor, Robert Stalnaker, Seth Yalcin

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\* Comments by Nicholas Jones, Cheryl Misak, and David Wiggins have improved this paper.

The long nineteenth century ended in 1914, so even the elongated twentieth is probably now past. As we say farewell to the previous millennium, this may be a good occasion to consider which offshoots of the British pragmatist tradition are still fertile. A strong form of pragmatism, I shall argue, faces insuperable problems, but a tempered version has prospects. The versions differ over the relationship between truth and content.

## 1. Truth and content

As so often in this area, it helps to begin by going back to Ramsey. In the book *On Truth* which he drafted between 1927 and 1929 but which was left incomplete at his death, Ramsey takes the primary bearers of truth and falsity to be *beliefs*—by which he means mental states, of a particular thinker at a particular time, which have both propositional content and ‘some degree of the affirmative character’ that is present in judging that such-and-such is the case but absent from merely wondering whether it is the case (Ramsey 1991: 8). Ramsey then proposes a definition of truth as it applies to beliefs in this sense. ‘Any belief whatever,’ he writes,

we may symbolize as a belief that  $p$ , where ‘ $p$ ’ is a variable sentence just as ‘ $A$ ’ and ‘ $B$ ’ are variable words or phrases (or terms as they are called in logic). We can then say that a belief is true if it is a belief that  $p$ , and  $p$ . In Mr Russell’s symbolism

$B$  is true  $:= (\exists p). B$  is a belief that  $p$  &  $p$ . Df (Ramsey 1991: 9, incorporating 15, *n.7*).

Similarly, but in a more up-to-date symbolism,  $B$  is false if and only if  $(\exists P)(B$  is a belief that  $P \wedge \neg P)$  (*op. cit.*: 11).

A.N. Prior’s way of reading these ‘sentential’ quantifiers yields nice English renderings of Ramsey’s formulae.<sup>1</sup> Prior glosses ‘ $\exists P$ ’ and ‘ $\forall P$ ’ using the non-nominal quantifiers ‘somehow’ and ‘anyhow’; their attendant variables may be read as ‘things are thus-and-so’ (Prior 1971). When so read, Ramsey’s definition of truth, as it applies to beliefs, comes to this: ‘ $B$  is true if and only if  $B$  is a

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<sup>1</sup> In this paragraph and the next two, I summarise arguments presented more fully in Rumfitt 2014. For the development of Ramsey’s thought between 1927 and 1929, see also Rumfitt 2011.

belief that things are somehow, and they really are thus-and-so'. More elegantly expressed, a belief is true if and only if things are as one who holds it thereby believes them to be.<sup>2</sup> Similarly, a belief is false if and only if things are not as one who holds it thereby believes them to be.

The account of truth and falsity presented in *On Truth* is not to be confused with the 'redundancy' theory that Ramsey had propounded in some of his earlier writings, notably 'Facts and Propositions' (Ramsey 1927). There, Ramsey had taken the primary bearers of truth and falsity to be propositions—items, he further contended, which did not exist. The central project of 'Facts and Propositions' was, then, to show how apparent reference to propositions, and attributions of truth and falsity to them, could be explained away or eliminated. Ramsey's position in *On Truth* is quite different. In the later work, he takes the primary bearers of truth and falsity to be particular states of belief, not propositions. States of belief surely exist. They have both causes—for example, perceptual states of the relevant subject—and effects: in tandem with desires, they often prompt action. The project, then, is no longer to eliminate apparent reference to truth, falsity, and their bearers. It is, rather, to spell out what it is for certain existing things to be true or false.

The definitions of truth and falsity that Ramsey proposes in *On Truth* have many merits. They extend naturally to other sorts of truth-bearer: for example, 'one who makes a statement or assertion makes a true statement if and only if things are as, in making that statement, he states them to be' (Strawson 1971: 180). They are not embarrassed by the Paradox of the Liar: given the account of truth for statements just formulated, a speaker who says 'This statement is not true' demonstrably fails to state that things are thus-and-so.<sup>3</sup> For this reason, indeed, Ramsey's definition of truth is also not embarrassed by Tarski's purported proof that truth is indefinable: that 'proof' requires treating Liar-like utterances as ones for which the question of truth arises and hence as having content.<sup>4</sup> Finally,

Ramsey's definitions of truth and falsity provide a natural gloss on Aristotle's account of these notions

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<sup>2</sup> The more elegant formulation comes from Strawson, in an Open University Third Level Arts Course programme from 1973, entitled 'Problems of Philosophy: Truth', which is still visible on YouTube.

<sup>3</sup> More precisely, we can show that there is no one proposition (up to material equivalence) which this statement expresses or says. Call the statement  $\lambda$  and suppose that  $\exists P \forall Q (\text{Say}(\lambda, Q) \leftrightarrow (Q \leftrightarrow P))$ . Let  $P$  be such that  $\forall Q (\text{Say}(\lambda, Q) \leftrightarrow (Q \leftrightarrow P))$ . Then  $\text{Say}(\lambda, P)$ . From our understanding of what  $\lambda$  would say, if it said anything, we have  $P \leftrightarrow \neg \exists Q (\text{Say}(\lambda, Q) \wedge Q)$ . That is,  $P \leftrightarrow \forall Q (\text{Say}(\lambda, Q) \rightarrow \neg Q)$ . Now suppose that  $P$ . Then  $\forall Q (\text{Say}(\lambda, Q) \rightarrow \neg Q)$ . Since  $\text{Say}(\lambda, P)$ , we have on this supposition  $\neg P$ , whence  $\neg P$  (discharging the supposition  $P$ ). But then  $\exists Q (\text{Say}(\lambda, Q) \wedge Q)$ , which combines with  $\forall Q (\text{Say}(\lambda, Q) \leftrightarrow (Q \leftrightarrow P))$  to yield  $P$ . This contradiction reduces the initial supposition to absurdity, so we conclude that  $\neg \exists P \forall Q (\text{Say}(\lambda, Q) \leftrightarrow (Q \leftrightarrow P))$ .

<sup>4</sup> See Rumfitt 2014: 36-9.

in the *Metaphysics* and thereby help us to assess Aristotle's subsequent argument for the Principle of Bivalence (see Rumfitt 2016).

A salient feature of Ramsey's definitions of truth and falsity is that they take *contents* as given: the definition of truth for beliefs, for example, takes as understood the notion of a belief's being a belief *that P*. This direction of philosophical explanation may seem to be inevitable, for whether a belief is true depends crucially on its content. Similarly, whether a statement is true depends crucially on what it says. C.E.M. Joad (one of my predecessors as Head of the Philosophy Department at Birkbeck College, London) used to moonlight as a panellist on *The Brains Trust*, a BBC radio programme in which luminaries fielded questions sent in by listeners. Joad became notorious for prefacing his answers to any philosophical questions by saying 'It all depends on what you mean by...' In doing this, he may have betrayed a lingering attachment to the positivist dogma that the answers to philosophical questions would be obvious as soon as their terms were properly explained or defined. But even though the 'all' overstates his case, Joad had a point. The answer—that is, the true or correct answer—to any question does depend crucially on what is meant by it. Consider 'Is free will compatible with determinism?' The right answer to that question might well be 'No' if you mean what Locke meant by 'free will' and what Laplace meant by 'determinism'. Equally, though, the right answer might be 'Yes' if you mean what Harry Frankfurt means by 'free will' and what John Earman means by 'determinism'. It depends on what you mean.

Any account of the relationship between truth and content must, indeed, respect two facts: the question of a statement's truth and falsity does not arise unless it has content; and before inquiring into its truth or falsity we need to know what that content is. We can respect these points, however, without supposing that Ramsey's formulae (even assuming that they are true) can serve as *definitions* of truth and falsity. Ramsey took them to be such, hence the 'Df' in the quotation from *On Truth* above, and they certainly permit the elimination of 'true' and 'false' in favour of vocabulary that does not, on its face, involve those terms. Some philosophers, though, will contend that the notions of truth and falsity lie only inches below the surface of Ramsey's *definiens*. According to his definition, a belief *B* is true if and only  $(\exists P)(B \text{ is a belief that } P \wedge P)$ , but what is it for *B* to be a belief that *P*? An important part of the answer, some will say, is that *B* should be true if and only if *P*. On this view, it is a mistake to treat Ramsey's formula as being a *definition* of truth. The *definiens* presupposes some understanding of what it is for a belief, or a statement, to be a belief or statement that *P*. As soon as we try to say what it

is for a belief or statement to be such, and what *gives* it that content—as soon, that is, as we try to provide a *theory of content*—we shall quickly find ourselves using the notion of truth. So the purported definition is circular.

For reasons that will emerge, I think that a theory of content will make essential use of the notions of truth and falsity. It follows that Ramsey's formulae cannot serve as definitions of truth and falsity in the fullest sense: they could not be used to explain these notions to someone who lacks even an implicit grasp of them. It also follows, I shall argue, that only a tempered version of a pragmatist theory of content is in the end tenable. We may approach this issue by considering two recent attempts to defend more ambitious forms of pragmatism.

## 2. Unsuccessful semantics

A theory of content will 'analyse the meaning of saying that a man has a belief that such-and-such is the case, for instance, that the earth is flat' (Ramsey 1991: 45). According to Ramsey, this is 'partly an assertion about what he would think or say and partly one about how he would behave' (*ibid.*). As Ramsey acknowledges, 'the assertion we make about his behaviour is evidently a very complicated one, for no particular action can be supposed to be determined by this belief alone; his actions result from his desires and the whole system of his beliefs, roughly according to the rule that he performs those actions which, if his beliefs were true, would have the most satisfactory consequences' (*ibid.*). Clearly, these brief remarks leave us several leagues short of any account of how a subject's behaviour—or anything else for that matter—determines the content of his beliefs.

Some of Ramsey's epigones have tried to make up the ground here. In a recent essay, 'Successful Semantics', D.H. Mellor develops what he calls 'an underrated answer' to the question of what gives a belief its content (Mellor 2012: 60).<sup>5</sup> The key to Mellor's account is what he calls *Ramsey's Principle*: 'the truth conditions of beliefs that combine with desires to cause actions are those

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<sup>5</sup> According to Ramsey, 'the propositional reference [i.e. the content] of <a man's> belief is to be defined in terms of the reference of his thinking or the meaning of his words' (Ramsey 1991: 45). Mellor thinks that, in the second alternative, Ramsey got things back to front: on Mellor's view, 'the meanings of sentences are fixed by the contents of beliefs they express' (Mellor 2012: 60). Mellor holds, indeed, that Ramsey's Principle can be used to show how beliefs fix the meanings of sentences that express them and that, had Ramsey so applied his Principle, 'he could have anticipated and bettered Grice's (1957) theory of meaning by thirty years' (*op. cit.*: 77). See Mellor *op. cit.* §9.

actions' success conditions, i.e. the conditions in which the actions fulfil those desires' (*op. cit.*: 68). According to Mellor, *any* contingent belief combines with desires to cause actions. On his view, then, Ramsey's Principle offers a general theory of what gives a contingent belief its content: it is given by the success conditions of the actions the belief helps to cause.

Mellor's leading example may help in understanding how the Principle is supposed to work. Let  $O$  be the proposition that a certain pub is open, let  $G$  be the proposition that I go to that pub, and let  $C$  be the proposition that I get a cider. For any proposition  $P$ , let  $B(P)$  be a particular state of my believing that  $P$ , let  $D(P)$  be a particular state of my desiring that  $P$ , and let  $A(P)$  be a particular action in which I bring it about that  $P$ . (Thus  $A(G)$  will be an action in which I go to the pub.) Mellor explicates the idea of a belief's combining with a desire to cause an action using J.L. Mackie's notion of an INUS condition (Mackie 1965): when my belief that the pub is open combines with my desire for a cider to cause me to walk there,  $B(O)$  and  $D(C)$  will each be insufficient but necessary parts of an unnecessary but sufficient condition for  $A(G)$ . Mellor's thought is that, when this relation obtains, the belief's content  $O$  and the action's content  $G$  are in their turn INUS conditions of  $C$ , the content of my desire. Thus the pub's being open and my getting there are insufficient but necessary parts of an unnecessary but sufficient condition for my getting a cider.

Now in order to give a belief's content, we need to specify necessary and sufficient conditions for its truth; an INUS condition is not enough. Mellor claims, however, that we can find these tighter conditions

by saying of  $B(O)$  and  $D(C)$ ,  $G$  and  $O$ , etc., that each is necessary and sufficient for its effect '*in its circumstances*' ('IC' for short), i.e. in all the other conditions, known or unknown, on which its being necessary and sufficient for that effect depends. It is in this IC sense that  $O$ , the pub's being open, is necessary and sufficient for  $C$ , my getting the cider I do  $A(G)$  to get. In other words, the belief  $B(O)$  that causes  $A(G)$  will be 'true IC' if and only if  $A(G)$  succeeds. That is what links  $B(O)$ 's truth condition  $O$  to  $A(G)$ 's success condition  $C$  (Mellor 2012: 70).

As Mellor appreciates, this linkage still does not give him what he needs. 'First,  $C$  will only give  $B(O)$ 's truth-conditions  $O$  if the bi-conditional ' $O \leftrightarrow C$ ' is not just true IC but *necessarily* true, which it is not. Second,  $B(O)$  is not the only belief that...causes  $A(G)$ . Take my belief  $B(H)$ , that the pub *has*

cider. This belief is as necessary and sufficient for  $A(G)$  in its circumstances, which include  $B(O)$ , as  $B(O)$  is in its circumstances, which include  $B(H)$ . Similarly,  $B(H)$ 's truth condition  $H$  is as necessary and sufficient for  $A(G)$ 's success  $C$  in its circumstances, including  $O$ , as  $O$  is in its circumstances, including  $H$ . How, then, if  $\lceil H \leftrightarrow C \rceil$  is as true IC as  $\lceil O \leftrightarrow C \rceil$  is, can Ramsey's Principle distinguish  $B(O)$ 's and  $B(H)$ 's truth conditions?' (*ibid.*)

The answer, Mellor thinks, lies in the different actions that  $B(O)$  and  $B(H)$  combine with desires to cause. So far, we have been focusing on the causes of a single action  $A(G)$ , but what gives a state of belief its content is the whole *set* of actions it combines with desires to cause. 'What gives  $B(P)$  the content  $P$  is that *all* those actions will succeed IC if and only if  $P$ ' (Mellor 2012: 70, emphasis added).  $B(O)$  combines with the desire for a beer to cause a walk to the pub; not so  $B(H)$ , so the theory accounts for  $B(O)$  and  $B(H)$ 's having different contents. The same point, Mellor thinks, also accounts for the necessity of the equivalence IC between  $P$  and the success condition of every action that  $B(P)$  would combine with some desire to cause. For Ramsey's Principle is a constitutive principle: it tells us 'what *makes* " $P$ " the truth condition of the belief that causes those actions' (Mellor 2012: 71, emphasis in original). As such, its deliverances are necessary truths.

This is an interesting account of what gives beliefs their contents. As Mellor acknowledges, it is an account which takes as understood the contents of desires and, indeed, of actions. As Mellor conceives of them, any action is an attempt (perhaps successful) to bring it about that  $P$ , so the success conditions of actions are as intentional as the truth conditions of beliefs.<sup>6</sup> If his account were to succeed, though, it would show how an agent's beliefs, desires and actions together make up a 'package deal' whose 'interdefinability <is> as unproblematic as that of Newtonian force and mass' (Mellor 2012: 71).

I shall argue, however, that it does not succeed. The basic problem lies in Mellor's notion of a conditions's being true, or necessary (or sufficient) for some other condition, *in its circumstances*.

As Mellor remarks, if his theory is to succeed, the bi-conditional  $\lceil O \leftrightarrow C \rceil$  must be, not merely true in its circumstances, but *necessarily* true in those circumstances. There are, indeed, some specifications of the relevant set of circumstances,  $S$ , which meet this condition. In particular, it will be met so long as any circumstance in which either  $O \wedge \neg C$  or  $\neg O \wedge C$  is excluded from  $S$ . A theory of

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<sup>6</sup> Indeed, following Alvin Goldman (1970), Mellor adopts a 'fine-grained' conception of actions whereby the action of going to the Free Press is distinct from that of going to the nearest pub, even if the Free Press is, in fact, the nearest pub. See Mellor 2012: 65.



content, however, must give some *independent* specification of this set  $S$ . We cannot characterize  $S$  as a set which has no member in which either  $O \wedge \neg C$ , or  $\neg O \wedge C$ . Our question is ‘What gives a belief like  $B(O)$  its content?’ It would be trivial or vacuous to answer ‘What gives it the content  $O$  is the fact that  $O$  is equivalent to  $C$  in any set of circumstances from which all circumstances in which either  $O \wedge \neg C$  or  $\neg O \wedge C$  have been excluded’.

Mellor would, I think, accept this last point for, as I read him, he proposes an independent characterization of the set  $S$ . Here, again, is the crucial passage, now set in a broader context:

Just as  $B(O)$  and  $D(C)$  are INUS conditions of  $A(G)$  itself, so  $O$  and  $G$ ,<sup>7</sup> the pub’s being open, and my going there, are INUS conditions of  $A(G)$ ’s success,  $C$ .  $A(G)$  and  $C$  have other INUS conditions too, of course: e.g., for  $A(G)$ , my being mobile and, for  $C$ , the pub’s having cider; and doubtless many others that I needn’t and perhaps can’t think of. But these can all be covered by saying of  $B(O)$  and  $D(C)$ ,  $G$  and  $O$ , etc., that each is necessary and sufficient for its effect ‘*in its circumstances*’ (‘IC’ for short), i.e. in all the other conditions, known or unknown, on which its being necessary and sufficient for that effect depends. It is in this IC sense that  $O$ , the pub’s being open, is necessary and sufficient for  $C$ , my getting the cider I do  $A(G)$  to get. In other words, the belief  $B(O)$  that causes  $A(G)$  will be ‘true IC’ if and only if  $A(G)$  succeeds. That is what links  $B(O)$ ’s truth condition  $O$  to  $A(G)$ ’s success condition  $C$  (Mellor 2012: 70).

Implicit in this passage is an account of what determines the relevant set of circumstances,  $S$ .  $B(O)$  and  $D(C)$  are merely INUS conditions of  $A(G)$ . However, there will be a restricted set  $S$  of circumstances in which  $B(O)$  and  $D(C)$  are not merely INUS conditions, but are individually necessary and jointly sufficient conditions of  $A(G)$ ’s occurrence.<sup>8</sup> The claim is then that the bi-conditional  $\lceil O \leftrightarrow C \rceil$  is true

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<sup>7</sup> The text has ‘ $A(G)$ ’ here, but that is surely a misprint.

<sup>8</sup> I read Mellor’s ‘saying of  $B(O)$  and  $D(C)$ ,  $G$  and  $O$ , etc., that each is necessary and sufficient for its effect *in its circumstances*’ as meaning that each *pair* is necessary and sufficient IC for its effect. A pair of conditions may be said to be necessary and sufficient for an effect when each member of the pair is necessary and both members are jointly sufficient. This reading gives Mellor’s theory the fairest possible wind. If he means that  $B(O)$  is by itself necessary and sufficient for  $A(G)$  in its circumstances, and that  $D(C)$  alone is necessary and sufficient for the same effect in *its* circumstances, then the question arises ‘In which of these distinct sets of circumstances is  $O$  necessary and sufficient for  $C$ ?’ The suggested reading pre-empts this awkward question.

in all the members of this set  $S$ . The bi-conditional, we might say, is true *throughout*  $S$ . This claim gives a non-vacuous content to the thesis that  $O$  is necessary and sufficient for  $C$  ‘in its circumstances’: we have identified the relevant circumstances otherwise than as those in which neither  $O \wedge \neg C$  nor  $\neg O \wedge C$  obtains. Moreover, we have an account which can be applied across the whole set of actions that a given belief combines with desires to cause. Whenever  $B$  combines with  $D$  to cause  $A$ , we may identify the relevant class of circumstances as the largest class  $S(A)$  throughout which  $B$  and  $D$  are individually necessary and jointly sufficient for the performance of  $A$ .  $B$ ’s content is then a condition  $P$ <sup>9</sup>/ such that, for any  $A$  caused by  $B$  and  $D$ ,  $P$  is equivalent to the satisfaction condition of the desire  $D$  throughout  $S(A)$ .

This reading of Mellor’s position certainly acquits it of the charge of triviality or vacuity. As I now argue, though, it does so at the cost of rendering it false.

To see why this is so, let us revert to the case of  $B(O)$  and  $D(C)$ . As Mellor says, these are merely INUS conditions for  $A(G)$ . Even taken jointly,  $B(O)$  and  $D(C)$  are insufficient for  $A(G)$ : if  $A(G)$  is to occur, I also need to believe that the pub has cider, that I am mobile, etc. If  $A(G)$  is to occur, I must also *not* have a desire more pressing than  $D(C)$  whose gratification would preclude my going to the pub. Moreover, neither  $B(O)$  nor  $D(C)$  is necessary for  $A(G)$ : I might go to the pub because I want some exercise and believe that walking there is a good way of getting it; that is,  $A(G)$  might happen even though I have no belief that the pub is open, nor any desire for cider. So we need to ask in which circumstances  $B(O)$  and  $D(C)$  are individually necessary and jointly sufficient conditions for  $A(G)$ .

While there are circumstances of this kind, they are, I suggest, rather particular in character. One requirement for being such a circumstance is that, in it,  $D(C)$  should be a necessary condition for  $A(G)$ . The circumstances in which this requirement is met will be those in which the only desire I have that might cause me to go to the pub is the desire for a cider. Only a cider will do, one might say. A second requirement is that  $B(O)$  should be a necessary condition for  $A(G)$ . That is, I will go to the pub *only if* I believe it is open. This further narrows the circumstances in  $S$ , for example by excluding my going to the pub *en route* to buy cider at the supermarket.

A third requirement is yet more stringent:  $B(O)$  and  $D(C)$  must be jointly sufficient for  $A(G)$ . That is, my desire for a cider and my belief that the pub is open must *themselves* be enough to make me

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<sup>9</sup> I say ‘a condition’, for we would need a further argument to establish uniqueness (even *modulo* necessary equivalence).

go there. There are, to be sure, circumstances where this condition is met. First, such a circumstance must be one in which I have ancillary beliefs which combine with  $B(O)$  and  $D(C)$  to cause  $A(G)$ . Such beliefs might be that the pub *has* cider, that the barman will sell me a cider if I have the money to pay for it, that I have enough money, etc. Second, because  $D(C)$  is *sufficient* for  $A(G)$  against this doxastic background, any such circumstance must be one in which my desire for a cider is *overpowering*. If  $D(C)$  is to be sufficient for  $A(G)$ , it is not enough for me to *want* a cider: I can want a cider yet remain seated in my armchair. Rather, my desire for a cider must be sufficient (given my doxastic state) to have me heading down to the pub. Putting these points together, we see that the circumstances where  $B(O)$  and  $D(C)$  are jointly sufficient for  $A(G)$  are those in which I have a real craving for cider while believing that the pub *has* cider, that the barman will sell me a cider if I have the money, etc. The relevant class of circumstances, then, is a very narrow sub-class of the cases in which  $B(O)$  and  $D(C)$  cause  $A(G)$ . In most ordinary cases where  $B(O)$  and  $D(C)$  combine to cause  $A(G)$ , these conditions are not jointly *sufficient* for  $A(G)$ . Yes, I went to the pub because I wanted a cider and believed that the pub was open. But I could have had that belief and that desire while remaining in my armchair. Our desires do not always prompt us to act on them.

Narrow as it may be, we have a reasonably clear conception of which circumstances will belong to the set  $S$  in this case, so we can assess the claim that is crucial to Mellor's theory of content. This is the claim that the bi-conditional  $\lceil O \leftrightarrow C \rceil$  is true throughout  $S$ . And it seems pretty clear that this claim is false. Restricting attention to circumstances in which I have an overwhelming craving for cider, in which only a cider will get me to the pub, and in which I have all the relevant beliefs, does not ensure the truth of  $\lceil O \leftrightarrow C \rceil$ . For such a circumstance might still be one in which the pub is open but I am penniless, and so do not get a cider; it might equally be one in which the pub is closed but I do get a cider (having unexpectedly been given a bottle by a friend in the pub car park, say). To be sure, in every member of  $S$  I shall have an appropriate set of ancillary beliefs, such as that the pub has cider, that I have money, etc. But this does not help, for my *belief* that I have money does not exclude the possibility of my being penniless. Beliefs do not have to be true.

Mellor's theory of a belief's content, I conclude, does not work. It will not do simply to invoke the notion of an action's being successful 'in its circumstances': if the theory is not to collapse into vacuity, Mellor needs to say which circumstances these are. Implicit in his discussion is an account of this: the circumstances in question will be those in which the belief and desire that cause an

action are not merely INUS conditions of the action, but are individually necessary and jointly sufficient for its occurrence. The thesis is then the content of the belief is equivalent to that of the desire in *these* circumstances. But this account, while certainly non-trivial, is false. Mellor has not succeeded in characterizing the ‘package deal’ that relates the contents of beliefs, desires and actions.

### 3. Dummettian pragmatism

Mellor’s proposal was of interest to us because it held out the prospect of a pragmatist theory of content which nowhere invokes the notion of truth. Had it succeeded, it would have vindicated Ramsey’s claim to have *defined* truth. Ramsey defines ‘*B* is true’ as ‘ $(\exists P)(B \text{ is a belief that } P \wedge P)$ ’. Mellor advances a theory of what makes it the case that *B* is a belief that *P* which (a) is cast in terms of *B*’s consequences for action and (b) eschews, even implicitly, the notion of truth. In giving a central role to a belief’s consequences for action, it is a pragmatist theory of content. In eschewing truth, it is an example of what I shall call a *strong* pragmatist theory. It does not succeed, though, so we have to consider whether there is another way of executing the strong pragmatist programme.

An odd feature of Mellor’s approach is that he focuses entirely on what lies downstream of a belief—on its consequences for action. Any theory worthy of the title ‘pragmatist’ must attend to these consequences, but it need not pay them exclusive attention. Indeed, it seems strange to focus so narrowly: one expects what lies upstream of a belief also to be relevant to its content. To switch metaphors, Mellor only takes account of the outputs of belief states, not their inputs. That seems to have been a mistake. In trying to find a better theory of content, we should take account of inputs as well as outputs, of *grounds* as well as consequences.<sup>10/</sup>

Mellor makes this mistake, I think, because he has an inadequate general account of what beliefs are. He cites with approval R.B. Braithwaite’s analysis: to believe that *P* (where *P* is contingent) is to be disposed to act as if *P*, in a circumstance where it matters whether *P*.<sup>11/</sup> This

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<sup>10</sup> By a *ground* for a belief, I mean something that justifies it. This sense of the term is not to be confused with that lately popularized by Kit Fine and his followers, whereby *x* grounds *y* if *y* obtains (or exists) *in virtue of x*.

<sup>11</sup> Braithwaite proposes an ‘analysis of belief’ according to which ‘I believe that *p*’ ‘means the conjunction of the two propositions: (1) I entertain *p*; and (2) I have a disposition to act as if *p* were true’ (Braithwaite 1933: 132). He acknowledges (*op. cit.*: 133) a debt to Alexander Bain.

analysis, though, is seriously incomplete. An agent may be disposed to act as if *P* because he is pretending that *P* (and someone may pretend that *P* even when it matters whether *P*). Braithwaite's analysis neglects the connection between beliefs and their grounds. While a thinker may have the odd *idée fixe*, his beliefs must, in the main, be responsive to evidence. In particular, no one can really believe that *P* in the face of overwhelming evidence that not *P*. I can act as if it is raining (even in circumstances where it matters whether it is raining) when there is no rain. But if I see full well that there is no rain, I cannot *believe* that it is raining. Indeed, if it is obvious that I can see that it is not raining, no one will take my disposition to act as if it is raining as a belief that it is raining. Even if I say 'It's raining' with apparent sincerity, people will respond 'He can't really believe that'.

Braithwaite's analysis has the further demerit of making it wholly mysterious why it is only in rather special circumstances that we can *decide* to believe that *P* (see Williams 1970). In very many cases, I can decide to act as if *P*, and by so acting I might inculcate a disposition to act in that way. In most of those cases, however, I cannot decide to *believe* that *P*. To believe that *P* is to be in a state of mind that is (*inter alia*) rationally sensitive to evidence whether *P*.<sup>12</sup> Whether there is such evidence is not usually something that I can decide.

In considering how contents might be given by a *combination* of grounds and consequences, it helps to examine some writings by Michael Dummett. Dummett is rarely thought of as a pragmatist philosopher, but there was in fact a marked pragmatist strain in his thinking. He was, of course, the last man to overlook the relevance of the grounds of a belief or statement to its content. In many writings, indeed, he takes a statement's content to be given by the grounds which would justify a speaker in asserting it. As he tried to work out the details of this 'justificationist' theory of content, however, he encountered difficulties which led him to explore a pragmatist alternative.

Like most philosophers of language and empirical linguists, Dummett held that the content of a complex statement is determined by the contents of its parts. If a statement's content is given by the

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<sup>12</sup> Unlike Braithwaite, C.S. Peirce did not lose sight of this important aspect of the notion of belief: 'It is one of the essentials of belief, without which it would not be belief...that a man could hardly be considered sane who should wish that though the facts should remain lamentable, he should believe them to be such as he would wish them to be' (MS 693: 11; 1911). In that sense, then, belief aims at the truth, and is thereby subject to the norms of evidence. In particular, a genuine belief will resign in the face of either recalcitrant experience or the recognition that it arose in a way that was not properly sensitive to evidence: people, 'when they see that any belief of theirs is determined by any circumstance extraneous to the facts, will from that moment not merely admit in words that that belief is doubtful, but will experience a real doubt of it, so that it ceases to be a belief' (Peirce 1877, §V).

grounds which would justify a speaker in asserting it, however, it is far from obvious how such a compositional theory of content might go. Disjunction already presents a difficulty. One cannot specify the content of a disjunctive statement by saying that a speaker has grounds for asserting  $\lceil A \text{ or } B \rceil$  when, and only when, he has either grounds for asserting  $A$  or grounds for asserting  $B$ . For a speaker often has grounds for asserting a disjunction while lacking grounds for asserting either disjunct. Dummett's solution to this problem was to introduce the notion of a statement's *canonical* grounds: it is these which give its content. He laid it down that a speaker has canonical grounds for asserting  $\lceil A \text{ or } B \rceil$  when, and only when, he has either canonical grounds for asserting  $A$  or canonical grounds for asserting  $B$ . The canonical grounds for other complex statements follow this pattern: they embody the standard introduction rule for the statement's principal connective.

A justificationist may do best by taking a statement's content to be given by its canonical grounds rather than by its grounds *tout court*. All the same, he still needs to say something about the relationship between canonical grounds and grounds more generally. When is a speaker justified in making an assertion? Dummett's answer—his so-called *Fundamental Assumption*—is that a speaker is justified in making an assertion when, and only when, he is, in principle, in a position to give a canonical ground for it. This Assumption enables Dummett to solve a further problem his theory faces when it is applied to deductive proofs. Many proofs (or apparent proofs) of complex statements do not terminate with an application of the introduction rule for the conclusion's principal connective. Given that a statement's content is given by its canonical grounds, one might well wonder how such proofs (or apparent proofs) can possibly be faithful to the contents of their conclusions. They are faithful, Dummett holds, so long as they show how to transform any canonical grounds for all the premisses into a canonical ground for the conclusion. Indeed, Dummett takes this condition to be the criterion for the validity of a deductive argument. This account of validity is an alternative to the more familiar account in terms of the (necessary) preservation of truth. Dummett's account, it may be noted, does not invoke the notion of truth at all.

This intellectual edifice, which draws heavily on prior work by Dag Prawitz, is a thing of wonder—a radical alternative to the usual accounts of validity, content, and their relations. However, it all rests on the Fundamental Assumption, and Dummett came to doubt if the Assumption could really bear the weight it needs to carry. The Assumption is somewhat indeterminate—it is not clear when a speaker is, *in principle*, in a position to give a canonical ground for an assertion—and Dummett

explores various ways of making it more precise. He finds, however, no fully satisfactory account and concludes his most extensive discussion of the topic (chapter 12 of *The Logical Basis of Metaphysics*) by saying that ‘our examination of the fundamental assumption has left it very shaky’ (Dummett 1991: 277). For reasons set out elsewhere (Rumfitt, forthcoming) I can only concur.

It is in this context that Dummett explores a pragmatist alternative to his justificationist theory of content. The underlying idea of a pragmatist theory ‘is that the content of a statement is what you can do with it if you accept it—what difference learning that it is true will, or at least may, make to you’ (Dummett 1991: 280). Now one thing you can do with a statement you accept is to draw consequences from it, and ‘if we see the content of a statement as determined by its consequences, we may regard the elimination rules [for the logical constants] as displaying the canonical means of drawing consequences from a complex statement, in the form of statements of lower complexity’ (*ibid.*). Let us call a consequence *direct* if it may be drawn from a statement by applying the elimination rule of the statement’s main connective (if necessary, in tandem with appropriate side premisses). Then we might, more precisely, take the content of a complex statement to be given by its direct consequences. As before, this yields a non-alethic account of the validity of arguments. An argument will be valid if it shows how any direct consequence of its conclusion may be obtained already from its premisses.<sup>13/</sup>

As in the case of a justificationist theory of content, this account will fail to validate intuitively sound deductive arguments unless it is supplemented with a further postulate. The natural additional postulate to consider is the *Inverse Fundamental Assumption*: ‘any consequence of a given statement can be derived by means of an argument beginning with an application of one of the elimination rules governing the principal operator of that statement, in which the statement figures as the major premiss’ (Dummett 1991: 281). The Inverse Fundamental Assumption, Dummett claims,

is open to fewer intuitive objections than the fundamental assumption...It is more plausible that we derive simpler consequences from complex statements only when those consequences

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<sup>13</sup> For more precise statements of this account of validity, see Dummett 1991: 281-6 and Prawitz 2007: 468-72. Litland (forthcoming, §4) corrects mistakes in Dummett’s pragmatist account of validity and shows that the Inverse Fundamental Assumption justifies the intuitionistic introduction rules for the connectives, given the intuitionistic elimination rules.

follow logically than that we assert such statements only when they follow logically [by introduction rules alone—IR] from simpler statements we have previously accepted (*ibid.*).

So, if one is in the market for a non-alethic account of validity, an account founded on the Inverse Fundamental Assumption does better than one founded on the Fundamental Assumption proper.

Dummett is right, I think, to hold that the Inverse Fundamental Assumption is more plausible than the Fundamental Assumption itself. That, however, does not justify the thesis that concerns us. That thesis says that a statement's content consists in what a speaker can do with it if he accepts it—what difference its acceptance makes to him. Perhaps the difference made by accepting a complex statement does lie in the potential acceptance of various simpler statements that follow from it, but 'the chain of consequences of a statement will lead downwards, through less and less complex statements, and eventually to atomic statements' (Dummett 1991: 281). The thesis is presented as a claim about statements generally. How is it to be applied to the atoms? The chain of consequences, Dummett explains, leads from these atoms 'outside language to actions' (*ibid.*). As he also acknowledges, though, identifying a class of actions as those consequential upon accepting an atom 'involves a pretence that atomic statements have consequences for action independent of the subject's desires and other beliefs, which is patently not so' (*ibid.*). A serious pragmatist theory of content cannot rest on this pretence. What form, then, might it take?

Dummett suggests that the content of an atomic statement may be represented as a function which takes actions as values and which has two argument places, one being filled with possible desires and the other with possible ancillary beliefs. Thus the content of 'It is raining' will map the desire to remain dry, together with the belief that I need to go outside, to the action of putting on a hat. The same content will also map the desire to do public penance, together with the belief that the best way of doing that is to get drenched where people congregate, to the action of standing bareheaded in the market-place (as Dr Johnson is said to have done at Uttoxeter; cf. Geach 1957: 8). It is clear, however, that functions of this kind do not help solve our problem. Given the information that a belief *B* combines with a desire to remain dry, and the belief that I need to go outside, to cause me to put on a hat, and that *B* also combines with a desire to do penance, and the belief that the best way to do that is to get drenched, to cause me to stand bareheaded, one might 'solve' for *B* and work out that it is a belief that it is raining. This conception of the problem, though, presupposes that we are given the



contents of the ancillary beliefs (as well as the contents of the desires). We have no answer to the central question we are addressing, which is what *in general* determines the contents of beliefs. In this respect, Dummett's pragmatist theory of content compares unfavourably with Mellor's. Mellor tried to show how the contents of beliefs were determined, given the contents of desires and actions. He did not assume given the contents of any beliefs.

In fact, Dummett's way of representing the potential bearing of a statement upon action is in any case objectionable. It will never be right to say that a thinker who accepts a statement  $A$ , and who has desires  $D_1, \dots, D_m$  and ancillary beliefs  $B_1, \dots, B_n$ , will perform the action  $\alpha$ . For the way a subject acts is always open to being changed by his acquiring additional desires or additional beliefs. The arguments of a function whose values are actions must be the agent's total doxastic state and his total preference ordering.<sup>14</sup>

When we recast the functions in this way, it becomes painfully clear that Dummett's flirtation with pragmatism has taken us no closer to answering our central question. First, he says nothing about *how* a subject's actions and preferences determine the content of his total doxastic state. We are no further forward than Ramsey's 'rough' rule that an agent will perform those actions which would have the most desirable consequences (given all his preferences) if his 'whole system of beliefs' were true. Second, even if that problem were solved, we have been given no indication how to recover the contents of individual statements, or of particular beliefs, from the total doxastic state. For all its faults, Mellor's theory at least addressed these problems. Dummett's account ignores them.

Dag Prawitz offers Dummett a very partial solution to the second problem (see Prawitz 2007). He proposes a 'semi-pragmatist' theory whereby the content of 'This object can be used to drive in nails' is given by the circumstances in which we would verify that the object in question can so be used. This in turn, he suggests, gives the content of the statement 'This object is a hammer'. Very few statements, however, are related to a decisive empirical test in the way 'This object is a hammer' is, so Prawitz's suggestion is not going to provide a general theory of statements' contents. Little wonder

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<sup>14</sup> Dummett explicitly recognized this in some later writings. In giving 'an account of what difference the assertion of a statement makes, actually or potentially, to what subsequently happens', it must be acknowledged that 'we do not merely react piecemeal to what other people say to us: we use the information we acquire, by our own observation and inferences and by what we are told, in speech and writing, by others, to build up an integrated picture of the world' (Dummett 2006: 29). Dummett's 'integrated picture of the world' is Ramsey's 'whole system of beliefs' and my 'total doxastic state'.

that Dummett responds to Prawitz's attempt to throw him a lifeline by remarking that 'on the whole, the prospects for a pragmatist theory of meaning seem bleak' (Dummett 2007: 484).

#### 4. Tempered pragmatism

Where should we go from here?

A natural thought is that Dummett does not, in the end, advance a theory of the kind we hoped to find in his work. We were seeking a theory in which the contents of beliefs and statements would be given *jointly* by their grounds and their consequences (including their implications for action). In *The Logical Basis of Metaphysics*, however, Dummett lurches from an account in which grounds alone give contents to a theory—or the outline of one—in which consequences alone do so. Is there a way of bringing into play *both* aspects of a statement's use, and *both* the input and the output conditions of beliefs?

Dummett returned to the problem in his Dewey Lecture of 2001, which were published as *Truth and the Past* (Dummett 2006). There, he found himself able to bring both aspects into play only by making essential use of an irreducible notion of truth. A ground for a statement is, in general, a basis for believing that it is true. A consequence of some statements is one which must be true, given that they are all true. 'The fault common to the classical theories of truth was that they attempted to explain the concept of truth by taking meanings [or contents] as given' (Dummett 2006: 107). The early Davidson made the opposite error, when he tried to explain meaning in terms of truth (107-8). On Dummett's view in *Truth and the Past*, 'the concepts of truth and meaning cannot be explained separately; only *together* can they be illuminatingly explained' (107). Hence the title of his second Dewey Lecture: 'The Indispensability of the Concept of Truth'.

The claim that truth will play an indispensable role in a theory of content is highly plausible. Ramsey hoped to spell out what it is for *B* to be a belief that *P* in terms of how a thinker in state *B* would behave. Now in saying, in general terms, how a speaker would behave, one will say things like 'He will act in conformity with the obvious consequences of his belief'. But if the general notion of consequence involves that of truth, truth must be involved in the theory of content. Of course, one would need to scrutinize other attempts to construct theories of content which eschew truth before one

could be fully confident of Dummett's conclusion. Let us, though, take it as a working hypothesis that truth plays an indispensable role in the theory of content.

If this hypothesis is correct, then Ramsey's account cannot serve as a *definition* of truth. According to Ramsey, a belief  $B$  is true if and only if  $(\exists P)(B \text{ is a belief that } P \wedge P)$ . The *definiens* includes ' $B$  is a belief that  $P$ '. If the hypothesis is right, truth lies just under the surface of the *definiens*, so we have not a proper definition. We should abandon the strong pragmatist programme of first defining truth in terms of content, and then trying to say what fixes a belief's or a statement's content purely in terms of its potential bearing on action.

What we need not abandon—indeed, what I think we should pursue—is a *tempered* pragmatism, a theory in which pragmatist elements contribute to the joint explanation of content, truth, and their relationship. Let us assume for the present that the bi-conditionals by which Ramsey tried to define truth are *true*.<sup>15</sup> Thus, a belief is true if and only if things are as one who holds it thereby believes them to be; a statement is true if and only if things are as its maker thereby states them to be. Unlike Ramsey, though, the tempered pragmatist will also advance reciprocal principles which invoke truth in characterizing content. One such principle will say that it is constitutive of  $B$ 's being a belief that  $P$  that  $B$  is true if and only if  $P$ .

In fact, while this is *partly* constitutive of  $B$ 's being a belief that  $P$ , I do not think it is anywhere near the whole story.<sup>16</sup> Like Dummett, albeit for different reasons, I reject the Principle of Bivalence, so the truth conditions of a belief or statement do not always determine its falsity conditions. On my view, then, the content of a belief or statement consists in the combination of its truth conditions and its falsity conditions. *Conditions* I take to be logically possible states of affairs, alias *possibilities*—ways in which (some) things could logically be. These ways need not be fully determinate, and the things in question need not be all the things in the universe, so my possibilities are not assumed to manifest the determinacy that marks out possible worlds. A possibility is a truth condition—or truth-ground—of a belief (or statement) if the belief (or statement) would be true, were the possibility to obtain. So, *pari passu*, for falsity conditions. Some philosophers (including Dummett) hold that the content of a statement is what is grasped by someone who understands it. On that view, only some of a statement's truth or falsity conditions will be part of its content, but we may

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<sup>15</sup> Rumfitt 2014 defends these bi-conditionals against the threat of intensional paradox.

<sup>16</sup> For arguments in favour of the claims made in this paragraph see Rumfitt 2015, especially chapter 6.

still take a statement's content to be given by its obvious truth conditions together with its obvious falsity conditions. This matches the way we test whether someone really understands a statement. We check this by running through some obvious truth and falsity conditions and seeing if the speaker gives the right answer to the question 'Were this possibility to obtain, would the statement be true or false?'

But can anything distinctively *pragmatist* thrive in this environment? I have sketched an account of what a statement's content *consists in*: viz. a combination of truth conditions and falsity conditions. But we also need to ask what *makes* it the case that a given statement (or belief) has the content that it has. My answer to the latter question is that *S* has the content it has because the assignment of truth and falsity conditions which constitutes that content *best fits* the use that competent speakers of the relevant language make of *S*. Pragmatist elements come into the picture because the ability to recognize what accepting *S* commits one to is an important aspect of the competent use of *S*. That is: the features of statements that a candidate assignment of truth and falsity conditions is expected to fit include the aspects of their use on which pragmatists focus. The notion of 'fit' will be unpacked by spelling out principles which relate a statement's truth and falsity conditions to aspects of its use. As Dummett's discussion brings out, the elimination rules that speakers go by when they deduce consequences from statements are central among the pragmatic features of their use. I shall illustrate this by showing how these features—and elimination rules in particular—contribute to determining the truth conditions of indicative conditionals.

## 5. Truth-conditions for conditionals

The claim that indicative conditionals have truth conditions is controversial. Some hold that indicatives are used in strict conformity with *Adams's Thesis*: to accept 'If *A* then *B*' is to be willing to accept *B* on the supposition that *A* is the case. It is then argued that sentences which so conform cannot have (non-trivial) truth conditions (see e.g. Edgington 1995). I have defused various versions of this 'bombshell' argument elsewhere.<sup>17</sup> Part of the problem with them is that Adams's Thesis has exceptions. Consider 'If Goldbach's Conjecture is true then  $0=1$ '. I could be brought to accept this

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<sup>17</sup> See Rumfitt 2013. However, new versions of the argument continue to appear, so the bomb disposal team has to remain on standby.

conditional by being shown a formal refutation of the Conjecture. However, I have absolutely *no* willingness to accept ‘ $0=1$ ’ on the supposition that Goldbach’s Conjecture is true (or on any other supposition).

Defusing the bombshells does not, by itself, show that conditionals have truth conditions and recent writers have advanced more subtle arguments for the claim that they do not. The general suggestion—which must be right—is that we should opt for the theory of conditionals which best accounts for the logical and linguistic data concerning their use. There is no question of trying to survey the full range of that data here, but one aspect of it is pertinent. The validity of Modus Tollens—from ‘If  $A$  then  $B$ ’ and ‘not  $B$ ’, infer ‘not  $A$ ’—is deeply embedded in the most familiar accounts which assign truth conditions to conditionals. This obviously holds for accounts which take the truth conditions of an indicative conditional to be those of the corresponding material conditional, but it also holds for Stalnaker’s (1968) possible-worlds theory. According to that theory, ‘If  $A$  then  $B$ ’ is true at a world  $w$  if  $B$  is true at the world nearest to  $w$  at which  $A$  is true. If both ‘If  $A$  then  $B$ ’ and ‘not  $B$ ’ are true at  $w$ , then  $A$  cannot be true there, for if it were,  $w$  would itself be the world nearest to  $w$  at which if  $A$  is true. Given Stalnaker’s underlying assumption of Bivalence, it follows that ‘not  $A$ ’ is true at  $w$ .

This is held to be problematical for truth-conditional treatments of indicatives, for there are said to be counterexamples to the validity of Modus Tollens. Thus Seth Yalcin (2012) has tried to ‘leverage’ a counterexample to Modus Tollens in order to cast doubt on the hypothesis that indicative conditionals have truth conditions. ‘If validity is understood in terms of truth-preservation,’ he writes, ‘then it is indeed difficult to see what the possible worlds truth-conditions of indicative conditionals could be if Modus Tollens is not valid for indicatives’ (Yalcin 2012: 1011).<sup>18</sup> For Yalcin, the failure of Modus Tollens is part of the evidence that supports a radically non-standard account of validity for arguments involving indicatives, whereby an argument is valid if any information state which *accepts* all the premisses also accepts the conclusion (see further Yalcin 2007). I am going to argue that this is

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<sup>18</sup> More precisely, given that Modus Tollens is not valid, Yalcin claims that it is hard to assign truth conditions to indicatives on the assumption that the conditional is a dyadic sentential operator. He allows that there is no difficulty in assigning truth conditions to indicatives if they are treated as implicitly quantified statements, as David Lewis (1975) and Angelika Kratzer (1983) have suggested. In order to engage Yalcin on his own terms, I shall also put the Lewis-Kratzer analysis to one side. It is noteworthy that, if that analysis is correct, then there really is no separate logic of vernacular conditionals: their inferential behaviour will be covered by the logic of generalized quantifiers.

an overreaction. I agree with Yalcin that there are counterexamples to Modus Tollens, and that there are problems accommodating these within the confines of possible-worlds semantics. The remedy, though, is not to recast validity in terms of preserving acceptance rather than truth. Instead, it is to cast one's truth-conditional semantics in terms of perhaps indeterminate possibilities rather than fully determinate worlds. For, as I now explain, the framework of possibilities sketched in §4 naturally yields an assignment of truth conditions to indicatives which invalidates Modus Tollens while validating the elimination rule for 'if...then' that we *do* go by: Modus Ponens.

The key semantic notion of that framework is truth at a possibility. When a statement  $A$  is true at a possibility  $x$ , let us call  $x$  a *truth-ground* of  $A$  and say that  $x$  *verifies*  $A$ . The set of  $A$ 's truth-grounds is written  $|A|$ . There is a natural quasi-order of *determination* on the space of possibilities:  $y$  determines  $x$  if, as a matter of necessity,  $x$  obtains if  $y$  does. This relation generates an operation  $\bullet$  of *combination*:  $x \bullet y$  is the least upper bound under determination of  $x$  and  $y$ . Two possibilities will have an upper bound only if they are compossible, but we may ensure that  $\bullet$  is always defined by adding to the space of possibilities an impossible state of affairs,  $\perp$ :  $x \bullet y = \perp$  if and only if  $x$  and  $y$  are not compossible. This notion of combination enables us to state a necessary and sufficient condition for a conclusion to follow from some premisses: any combination of truth-grounds of the premisses is also a truth-ground of the conclusion. This captures, within the present framework, Aristotle's idea that consequence is the necessary preservation of truth from premisses to conclusion. Thus  $B$  follows from  $A_1, \dots, A_n$  if and only if

$$|A_1| \bullet \dots \bullet |A_n| \subseteq |B|.$$

Here,  $|A| \bullet |B|$  is the set that contains all combinations  $x \bullet y$ , where  $x \in |A|$  and  $y \in |B|$ .

When it comes to the indicative conditional, most people accept that 'If  $A$  then  $B$ ' and  $A$  jointly entail  $B$ . Thus, using ' $A \rightarrow B$ ' to symbolize the indicative 'If  $A$  then  $B$ ', we have

$$|A \rightarrow B| \bullet |A| \subseteq |B|.$$

That is, whenever  $x$  is a truth-ground of  $\lceil A \rightarrow B \rceil$ , it combines with any truth-ground of  $A$  to yield a truth-ground of  $B$ . Let us define a binary operation  $\Rightarrow$  on sets of possibilities as follows:  $x \in U \Rightarrow V$  if and only if, for any possibility  $u \in U$ ,  $x \bullet u \in V$ . The inclusion above then implies

$$|A \rightarrow B| \subseteq |A| \Rightarrow |B|.$$

Now suppose that  $x$  is a member of  $|A| \Rightarrow |B|$ . That is,  $x$  combines with any truth-ground of  $A$  to yield a truth-ground of  $B$ . In the event that  $x$  obtains, if any truth-ground of  $A$  obtains, a truth-ground of  $B$  obtains. So, in the event that  $x$  obtains, if  $A$  is true then  $B$  is true, so that  $\lceil A \rightarrow B \rceil$  is true. Since  $x$  was an arbitrarily chosen member of  $|A| \Rightarrow |B|$ , we have the converse inclusion:  $|A| \Rightarrow |B| \subseteq |A \rightarrow B|$ . We thus reach the following specification of the truth-grounds of an indicative conditional:

$$(Ind) \quad |A \rightarrow B| = |A| \Rightarrow |B|.$$

In words rather than symbols: a truth-ground of  $\lceil \text{If } A \text{ then } B \rceil$  is any possible state of affairs which combines with any truth-ground of  $A$  to yield a truth-ground of  $B$ .<sup>19</sup> This account is attractive. According to it, what makes ‘If this match is struck, it will light’ true is the obtaining of a state of affairs—e.g. that of the match’s containing phosphorus and being in oxygen—which combines with its being struck to produce a state of affairs in which it lights.<sup>20</sup>

(*Ind*) does not settle the falsity conditions of conditionals. It is clear to everyone that a sufficient condition for  $\lceil \text{If } A \text{ then } B \rceil$  to be false is that  $A$  should be true and  $B$  false. However, it is far from clear that this condition is necessary: there may be other circumstances in which we are entitled to assert  $\lceil \text{It is not the case that if } A \text{ then } B \rceil$ .

Some readers will be unimpressed by the justification for (*Ind*). ‘Your argument for the thesis  $|A \rightarrow B| \subseteq |A| \Rightarrow |B|$ ’, they will say, ‘assumes that arguments by Modus Ponens are always valid. Yet this cannot be taken for granted. Philosophers have presented apparently compelling

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<sup>19</sup> In fact, the space of possibilities has to be what I call ‘regular’ for the indicative conditional to be well-behaved. See Rumfitt 2015 §6.4.

<sup>20</sup> I proposed (*Ind*) at Rumfitt 2013: 186. For similar accounts of the meaning of the indicative conditional, see Fine 2014, and Yablo 2014: chapter 4.

counterexamples to Modus Ponens.’ Thus Vann McGee considers the situation shortly before the 1980 U.S. Presidential election, where opinion polls showed the Republican Ronald Reagan ahead of the Democrat Jimmy Carter, with the other Republican in the race, John Anderson, a distant third. According to McGee,

those apprised of the poll results believed, with good reason:

- (1) If a Republican wins the election, then if it’s not Reagan who wins it will be Anderson
- (2) A Republican will win the election.

Yet they did not have reason to believe

- (3) If it’s not Reagan who wins, it will be Anderson.

(McGee 1985: 462, with numbering added)

In the situation described, McGee takes (1) and (2) to be true but (3) not to be true; hence the putative counterexample to Modus Ponens. I agree that (2) is true and that (3) is not true. However, insofar as we are tempted to accept (1)—which is, after all, a conditional with a true antecedent and an untrue consequent—that will be because we confuse it with

- (0) If a Republican wins the election and it’s not Reagan who wins, it will be Anderson.

Since Reagan and Anderson were the only Republicans on the ballot, (0) is certainly true, but the untrue (1) does not follow from it. What McGee’s case provides, then, is a counterexample to the rule of *Exportation*: from  $\lceil (A \wedge B) \rightarrow C \rceil$ , infer  $\lceil (A \rightarrow (B \rightarrow C)) \rceil$ . It is easy to verify that (*Ind*) can accommodate such counterexamples.<sup>21</sup>

Let us, then, assume as a working hypothesis that the truth-grounds of indicative conditionals are given by (*Ind*). Can this hypothesis accommodate counterexamples to Modus Tollens? In showing that it can, we may work with Yalcin’s leading example:

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<sup>21</sup> McGee’s is not the only counterexample to Modus Ponens that philosophers have taken seriously. Kolodny and MacFarlane (2010) present another. However, their more elaborate case only generates a counterexample to Modus Ponens given contestable assumptions about obligation.



An urn contains 100 marbles, a mix of blue and red, big and small. The breakdown:

	blue	red
big	10	30
small	50	10

A marble is selected at random and placed under a cup. This is all the information given about the situation. Against this background, the following claims about the marble under the cup are licensed:

(P1) If the marble is big, then it's likely red.

(P2) The marble is not likely red.

However, from these, the following conclusion does not intuitively follow:

(C1) The marble is not big.

But this conclusion would follow, were Modus Tollens valid. So Modus Tollens is not generally valid (Yalcin 2012: 1001-2).

Let  $w$  be the possible state of affairs specified by these stipulations. Let  $A$  be the statement 'The marble under the cup is big', and  $B$  be 'The marble under the cup is likely red'. Yalcin claims that (P1) is 'licensed', and our analysis confirms that  $w$  verifies  $\lceil A \rightarrow B \rceil$ . For let  $u$  be a truth-ground of  $A$ . We need to show that  $w \bullet u$  is a truth-ground of  $B$ , and this condition is met. The minimal possible state of affairs which combines  $w$  and  $u$  is that specified by the top line of Yalcin's matrix. In that top line three quarters of the marbles are red, so  $w \bullet u$  does indeed verify  $B$ .

What of Yalcin's second premiss, (P2)? In order to assess this, we need to extend the semantic theory to cover negation. We may do this by introducing a dyadic relation of incompatibility between possible states of affairs. Given that relation, we may say that a possibility is a truth-ground of  $\lceil \text{not } A \rceil$  if and only if it is incompatible with every truth-ground of  $A$ . Thus, writing  $U^\perp$  for the set of all possibilities that are incompatible with every member of  $U$ , we have

$$(Neg) \quad \neg A = A^\perp \text{.}^{22/}$$

Given *(Neg)*, we can confirm that  $w$  verifies  $\neg B$ . For it is part of the specification of  $w$  that only 40 of the 100 marbles in the urn are red, and this is surely incompatible with any truth-ground of ‘The marble is likely red’. That is, Yalcin’s second premiss, (P2), is also true in the circumstance imagined.

What, finally, of the conclusion, (C1)? In order for  $\neg A$  to be true at  $w$ ,  $w$  would have to be incompatible with any truth-ground of  $A$ , i.e. with any state of affairs in which the hidden marble was big. It is clear, however, that nothing in the specification of  $w$  rules out that marble’s being big. So, by *(Neg)*, (C1) is not true.

Yalcin is right, then, to present his case as a counterexample to Modus Tollens. He is wrong, however, to think that it casts any doubt on the hypothesis that indicatives have truth conditions. Our analysis treats them as having such, and takes consequence to consist in the necessary preservation of truth. Indeed, it enables us to state precisely the circumstances in which Modus Tollens will be valid and to reconcile the existence of counterexamples to it with the unrestricted validity of Modus Ponens.

For when will  $\neg A$  follow from ‘If  $A$  then  $B$ ’ and  $\neg B$ ? By *(Ind)* and *(Neg)*, this will be when  $(A \Rightarrow B) \bullet B^\perp \subseteq A^\perp$ . Assuming that a statement is always equivalent to its double negation—so that  $A = A^{\perp\perp}$  for any  $A$ —a little algebraic manipulation shows that this condition is met just in case  $w \bullet u \perp v$  implies  $w \bullet v \perp u$  for any  $u, v, w$  in the space of possibilities that are relevant to the assessment of the argument. It is easy to check that this condition fails in Yalcin’s case. Let  $w$  and  $u$  be as above, and let  $v$  be the possibility that it is *not* likely that the marble under the cup is red. As before,  $w \bullet u$  is the state of affairs specified by the top line of Yalcin’s matrix, so that  $w \bullet u$  is incompatible with  $v$ . However,  $w \bullet v$  is *not* incompatible with  $u$ . It is part of the specification of  $w$  that only 40 of the 100 marbles are red, so  $w \bullet v$  is the same as  $w$ . Moreover,  $w$  is entirely compatible with  $u$ . As expected, then, the space of possibilities in Yalcin’s case does not satisfy the semantic condition necessary to validate Modus Tollens.

From a semantic point of view, moreover, our theory shows how violations of Modus Tollens can cohere with the validity of Modus Ponens. The validity of the latter rule is in effect built into *(Ind)*, the semantic principle for the conditional. *Per contra*, the validity of Modus Tollens depends upon a

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<sup>22</sup> For the many merits of *(Neg)* as a semantic principle for negation, see Rumfitt 2015 chapter 7.

condition (just stated) which regulates the interaction of combination and incompatibility. The proposed semantics has the degrees of freedom needed to validate Modus Ponens while allowing for exceptions to Modus Tollens.

There may be a residual mystery when we turn to the proof theory, for there is a familiar derivation of Modus Tollens from Modus Ponens which appears to use only unexceptional principles about negation:

- |    |                   |                                                |
|----|-------------------|------------------------------------------------|
| 1. | $A \rightarrow B$ | Premiss                                        |
| 2. | $\neg B$          | Premiss                                        |
| 3. | $A$               | Assumption                                     |
| 4. | $B$               | 1, 3 Modus Ponens                              |
| 5. | $\perp$           | 2, 4 $\perp$ -introduction                     |
| 6. | $\neg A$          | 3, 5 RAA, with discharge of the assumption $A$ |

When applied to the present  $A$  and  $B$ , however, the fallacy in this derivation is obvious: the content of ‘ $B$ ’ shifts between its occurrence in  $\neg B$  in line (2) of the main proof, and its recurrence at line (4) in the subordinate deduction (3)–(5). For at line (2), the relevant domain of marbles is the full urn, whereas line (4) lies within the scope of the assumption that the marble is big, so that the domain relevant to (4) comprises only the 40 big marbles. This shrinkage of the domain affects the content of ‘It is likely that the hidden marble is red’, so that the use of the single sentence letter ‘ $B$ ’ to represent the two contents is wrong. What the case brings out from a proof-theoretic perspective is that the content of a sentence may vary depending on the *suppositional* context within which it is uttered or inscribed (cf. Cantwell 2008 §1.2). The case reveals yet another respect, then, in which we need to heed shifts of context when assessing deductions. There is, however, no need to emend the logical rules for negation in order to block the derivation of Modus Tollens from Modus Ponens.

My account of the truth conditions of indicatives does better than Stalnaker’s in allowing violations of Modus Tollens. It may seem, however, that it pays a heavy price for that when dealing with other inference patterns involving conditionals. Stalnaker’s truth conditions permit violations of

*Antecedent Strengthening*      From  $A \rightarrow C$ , infer  $(A \wedge B) \rightarrow C$       and

By contrast, given only highly plausible further assumptions, my theory is committed to the validity of both these rules. For Antecedent Strengthening, the further assumption in question is that  $|A \wedge B| \subseteq |A|$ . For suppose that  $w \in |A \rightarrow C|$ . By (*Ind*), we have  $w \bullet u \in |C|$  whenever  $u \in |A|$ . Given the further assumption, we have that  $w \bullet u \in |C|$  whenever  $u \in |A \wedge B|$ , so that  $w \in |(A \wedge B) \rightarrow C|$  by (*Ind*). For Hypothetical Syllogism, the additional assumption is that the operation of combination is both associative and idempotent. For suppose that (1)  $w \in |A \rightarrow B|$  and (2)  $w \in |B \rightarrow C|$ , and let  $u$  be any possible state of affairs that verifies  $A$ . From (1) we have  $w \bullet u \in |B|$  and hence  $w \bullet (w \bullet u) \in |C|$  given (2). By associativity of  $\bullet$ , this implies that  $(w \bullet w) \bullet u \in |C|$ , whence  $w \bullet u \in |C|$  by idempotence. Since  $u$  was an arbitrarily chosen member of  $|A|$ , (*Ind*) then implies that  $w \in |A \rightarrow C|$ .

Just as the validity of Modus Tollens is built into Stalnaker's 1968 truth conditions for indicatives, then, the validity of Antecedent Strengthening and Hypothetical Syllogism is pretty much built into mine. Is this a problem? Some philosophers will think so. Thus John Burgess, maintaining the tradition of using examples pertaining to U.S. Presidential elections, considers a situation early in the 2008 campaign, before the primaries took place. We are to assume 'that Clinton and Obama are overwhelmingly likely to come in either first and second or second and first in the Democratic primary, and that they could both be on the general election ballot only if there were a split in their party, making a loss certain' (Burgess 2009: 80). Given that assumption, Burgess presents counterexamples to both Antecedent Strengthening and Hypothetical Syllogism:

If Obama is on the general election ballot, the Democrats will win.

So, if Clinton and Obama are both on the general election ballot, the Democrats will win.

If Clinton wins the primary, Obama will come in second.

If Obama dies before the primary, Clinton will win it.

So, if Obama dies before the primary, he will come in second. (Burgess 2009: 80-1)

<sup>23</sup> His truth conditions also permit violations of the rule-of-inference form of Contraposition: from  $|A \rightarrow B|$ , infer  $|\neg B \rightarrow \neg A|$ . However, my theory also invalidates that rule.

How perturbed should a friend of (*Ind*) be by these examples? Not much, I think. Any argument is propounded in a context in which certain possibilities are open or ‘live’—i.e. are not ruled out when it comes to assessing its premisses and conclusion. In a logically valid argument, any possibility that combines truth-grounds of the various premisses will be a truth-ground of the conclusion. In applying this condition, however, it is assumed that the set of live possibilities does not shift between the premisses and the conclusion. In each of Burgess’s examples, I contend, there needs to be such a shift if the premisses are to come out true and the conclusion false, so his cases are not counterexamples to the specified logical rules.

This is perhaps clearest in the purported counterexample to Antecedent Strengthening. Its premiss, ‘If Obama is on the general election ballot, the Democrats will win’, will only be true in a context where the possibility of a split in the Democratic Party has been set aside. *Ex hypothesi*, the Democrats will lose if both Obama and Clinton are on the ballot. So, if such a possibility obtains, it will not combine with Obama’s being on the ballot (which, in fact, it includes) to yield a possibility in which the Democrats win. The premiss of Burgess’s argument, then, is true only in a context where the relevant set of possibilities excludes any possible state of affairs in which both Clinton and Obama are on the ballot. An utterance of the argument’s conclusion, by contrast, put us in a new context where the relevant space of possibilities has been enlarged: in the new context, the possibility that both Clinton and Obama contest the general election is very much open. This means that the case is no counterexample to Antecedent Strengthening. For it to be such, there would have to be a *single* space of possibilities, one of which was a truth-ground of the premiss but not a truth-ground of the conclusion. Burgess does not present such a space.

Much the same goes for the putative counterexample to Hypothetical Syllogism. Here, the first premiss will only be true in a context where the possibility of Obama’s dying before the primary has been set aside. In assessing its second premiss and its conclusion, however, we are forced to shift to a context in which that possibility is live. For all that Burgess says, then, this rule is valid, too.

In defending the validity of these rules, *all* I am claiming is that any instance of them is an argument, the truth of whose premisses necessitates the truth of its conclusion. I am not defending them as rules, by applying which one can reliably move from reasonable belief in the premisses to reasonable belief in the conclusion. Adams’s Thesis, we observed, has exceptions. It is, however, a good approximation to the truth, as is the mathematicised form of it that Dorothy Edington calls ‘the

Equation': the degree to which a rational thinker will accept 'If  $A$  then  $B$ ' matches the conditional probability he assigns to  $B$ , on the supposition that  $A$  is true (Edgington 1995: 271). In the many cases to which the Equation applies, there will be instances of each of our rules where a thinker rationally accepts the premisses but rationally rejects the conclusion. This point may lessen the interest of the claim that Antecedent Strengthening and Hypothetical Syllogism are valid rules, but at least our framework has the resources to distinguish validity from other desirable properties of arguments. As our discussion of Dummett brought out, it is hard to do this without invoking the notion of truth.

In *The Boundary Stones of Thought*, I showed how a framework of possibilities rather than full-blown possible worlds provides an arena for rational debate about conflicting logical principles for negation and disjunction. In the present essay, I have begun to argue that it also affords a promising tempered pragmatist treatment of indicative conditionals.

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